

Amendments to the Drawings:

The attached sheet of drawings includes changes to Figs.1 and 2. This sheet, which includes Figs. 1-2, replaces the original sheet including Figs.1-2. In Figs. 1 and 2 the legend —Prior Art— has been added.

Attachment: Replacement Sheets

REMARKS

Applicant respectfully requests reconsideration of this application as amended. Applicant reserves all rights with respect to the applicability of the doctrine of equivalents.

Status of Claims

The Office Action states that claims 1-20 are pending in the application. Claims 1-20 have been rejected.

Claims 1, 4, 6, 9, 11, 13, 15, 17, and 19 have been amended. The amended claims are supported by the specification. Specifically, support can be found in paragraphs [0001], [0018], [0021] and Figures 4 and 5. No new matter has been added.

Double Patenting

Claims 1-20 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 7 and 24 of co-pending Application No. 10/746,667 (herein after '667).

Applicant has filed herewith a terminal disclaimer for this patent application (No. 10/644,399) in compliance with 37 C.F.R. 1.321(c). This patent application is commonly owned with co-pending Application No. 10/746,667. It is submitted that the terminal disclaimer filed herewith overcomes the provisional rejection stated above for claims 1-20.

Claim Rejections - 35 USC § 112

Claims 4, 11, 12, 13 and 14 stand rejected under 35 U.S.C. 112 second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 4 recites the limitation "the return addresses retrieved from the first and

second stack" in lines 2 and 3. The Office Action states that there is insufficient antecedent basis for this limitation in the claim.

Claim 4, as amended, has replaced the limitation "the return addresses retrieved from the first and second stack" with the limitation "the return address retrieved from each of the first and second stack" which is supported by the limitation "saving a return address in a first stack and in a second stack" as recited in independent claim 1. Accordingly, applicant respectfully requests withdrawal of the rejection of claim 4 under 35 U.S.C. § 112, second paragraph.

Claims 11 and 13 each recite the limitation "the return address retrieved from the first stack." There is insufficient antecedent basis for this limitation in the each claim according to the Office Action.

Claim 11, as amended, reads as follows.

A processor, comprising:

memory management logic to allocate first and second memory locations corresponding to first and second stacks, respectively, when a function call instruction calls to a called function is encountered during program execution;

function call logic to write a return address to a memory location from the first memory locations and to a memory location from the second memory locations, the return address being an address at which program flow is to resume after execution of the called function; and

buffer overflow control logic to determine if the return address retrieved from the first memory locations matches the return address retrieved from the second memory locations, upon execution of the called function.

The limitation "the return address retrieved from the first stack" has been replaced with the limitation "the return address retrieved from the first memory locations" which has antecedent basis support based on the limitation "a return address to a memory location from the first memory locations" as recited in claim 11. Claim 13 has been similarly amended. Accordingly, applicant respectfully requests withdrawal of the rejection of claims 11, 13 and dependent claims 12 and

14 under 35 U.S.C. § 112, second paragraph.

Claim Rejections - 35 USC § 102

Claims 1-20 are rejected under 35 U.S.C. 102(e) as being anticipated by McDonald, US Patent Application Publication US2004/0143727 A1 (herein after "McDonald").

Independent claim 1, as amended, reads as follows.

A method, comprising:

encountering a function call instruction that calls a called function during program execution;

saving a return address in a first stack and in a second stack at the same time, the return address containing an instruction to be executed after execution of the called function;

executing the called function; and

determining if the return address stored in the first stack matches the return address stored in the second stack to provide protection from a buffer overflow attack.

(Emphasis Added).

McDonald discloses in paragraph [0005] the following:

In a microprocessor that incorporates a call/return stack, when a call instruction executes, the return address is pushed onto the call/return stack to enable instruction fetching to continue, and later stages of the pipeline subsequently update the main memory stack with the return address. Conversely, when a return instruction executes, the return address is popped from the call/return stack to enable instruction fetching to continue, without having to wait for the relatively lengthy retrieval of the return address from the main memory stack.

Thus, the return address is saved in call/return stack and the main memory stack at different times in order to avoid the lengthy retrieval of the return address from the main memory stack.

McDonald further discloses a segmented correction apparatus that keeps the correction information for a speculative call/return instruction in different segments

depending upon the location of the call/return within the pipeline, thereby enabling selective correction based on the stage in which the call/return instruction resides at the time of the detection of the invalidating event relative to the stage that detects the invalidating event. (McDonald, paragraph [0009]). Thus, McDonald provides selective correction for speculative call/return instructions based on the detection of an invalidating event such as a branch instruction misprediction. (McDonald, paragraph [0013]).

By contrast, McDonald does not disclose saving a return address in a call/return stack and in a main memory stack at the same time. McDonald does not disclose determining if the return address stored in the call/return stack matches the return address stored in the main memory stack to provide protection from a buffer overflow because McDonald merely discloses providing selective correction for speculative call/return instructions based on the detection of an invalidating event such as a branch instruction misprediction.

Therefore, McDonald does not disclose each and every limitation of amended claim 1. As such, amended claim 1 is not anticipated by McDonald under 35 U.S.C. § 102(e).

Claims 6, 9, 11, 13, 15, 17 and 19 contain similar limitations but not identical as compared to claim 1. For similar reasons, independent claims 6, 9, 11, 13, 15, 17 and 19 are not anticipated under 35 U.S.C. § 102(e) in view of McDonald.

It is submitted that claims 2-5, 7, 8, 10, 12, 14, 16, 18 and 20 are not anticipated by McDonald under 35 U.S.C. § 102(e) given that claims 2-5, 7, 8, 10, 12, 14, 16, 18

and 20 depend from and include the limitations of one of the corresponding independent claims 1, 6, 9, 11, 13, 15, 17 and 19.

Conclusion

It is respectfully submitted that in view of the amendments and remarks set forth herein, the rejections and objections have been overcome. An Information Disclosure Statement is also submitted with this amendment. Applicant reserves the right to swear behind the McDonald reference. If there are any additional charges, please charge them to our Deposit Account No. 02-2666. Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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